

# CLIMATE LEADERS

SETTING THE STANDARD IN GREENHOUSE GAS MANAGEMENT

## Introduction to the Climate Leaders Program

GHG Management Workshop for Federal Agencies

January 11, 2008



## Benefits of Partnership

**Every year the Climate Leaders Partners prevent the equivalent of the emissions of 8 million cars from entering the atmosphere!**

- Reduce impact on the global environment
- Better manage greenhouse gas emissions and associated risks
- Realize cost savings through energy efficiency
- Receive expert EPA technical assistance on inventories
- Participate in national public recognition campaigns
- Engage with other partner companies demonstrating climate leadership
- Access the latest GHG tools, technologies & protocols
- Improve understanding of critical policy discussions
- Integrate climate change strategies with State, Regional, and International GHG accounting schemes



# Credible Corporate Climate Strategy

## Climate Leaders works with companies to develop a long-term comprehensive GHG management strategy

- Road-tested with over 150 partners from every major sector across the country
- 3 critical components to credible strategy
  - Component 1: Complete Corporate-Wide GHG Inventory
  - Component 2: Develop Inventory Management Plan (IMP)
  - Component 3: Set Aggressive Corporate-Wide GHG Reduction Goal
- Annual reporting to EPA creates lasting record of accomplishments and identifies company as corporate environmental leader
- Total annual U.S. revenue of the partnership represents 10 percent of the U.S. Gross Domestic Product and 8 percent of total annual U.S. GHG emissions

## Program Participation Steps

**Partner Joins Program**



**EPA assists Partner in developing inventory and inventory management plan (generally within 1 year)**

**Partner sets agency wide 5-10 year GHG reduction goal, domestic or global**

**Partner may participate in meetings, public outreach, press events, etc.**

**Partner reports annual inventory data to EPA and documents progress toward goal**



**Partner Achieves Goal**



# Reporting First and Second Components

# First Component: Develop a Customized Inventory

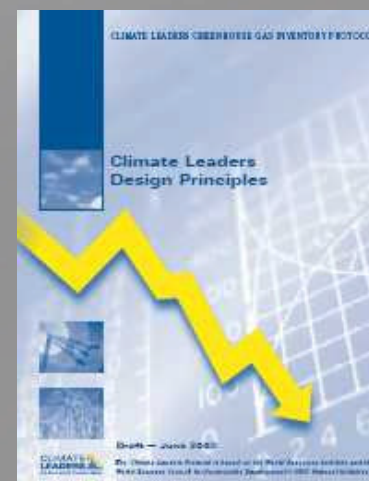
## Based on International WRI/WBCSD GHG Protocol

### Required

- Agency-wide (all U.S. operations)
- 6 major GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC/PFC, SF<sub>6</sub>)
- Direct emissions
- Indirect emissions from electricity, heat, and steam

### Optional

- International operations
- Offset projects
- Employee travel and commuting
- Product transport



# First Component:

## Step 1 - Identify Organizational Boundaries

Which facilities should you include?

Equity Share Approach- by ownership, or  
Control Approach- by control

- Financial control versus operational control

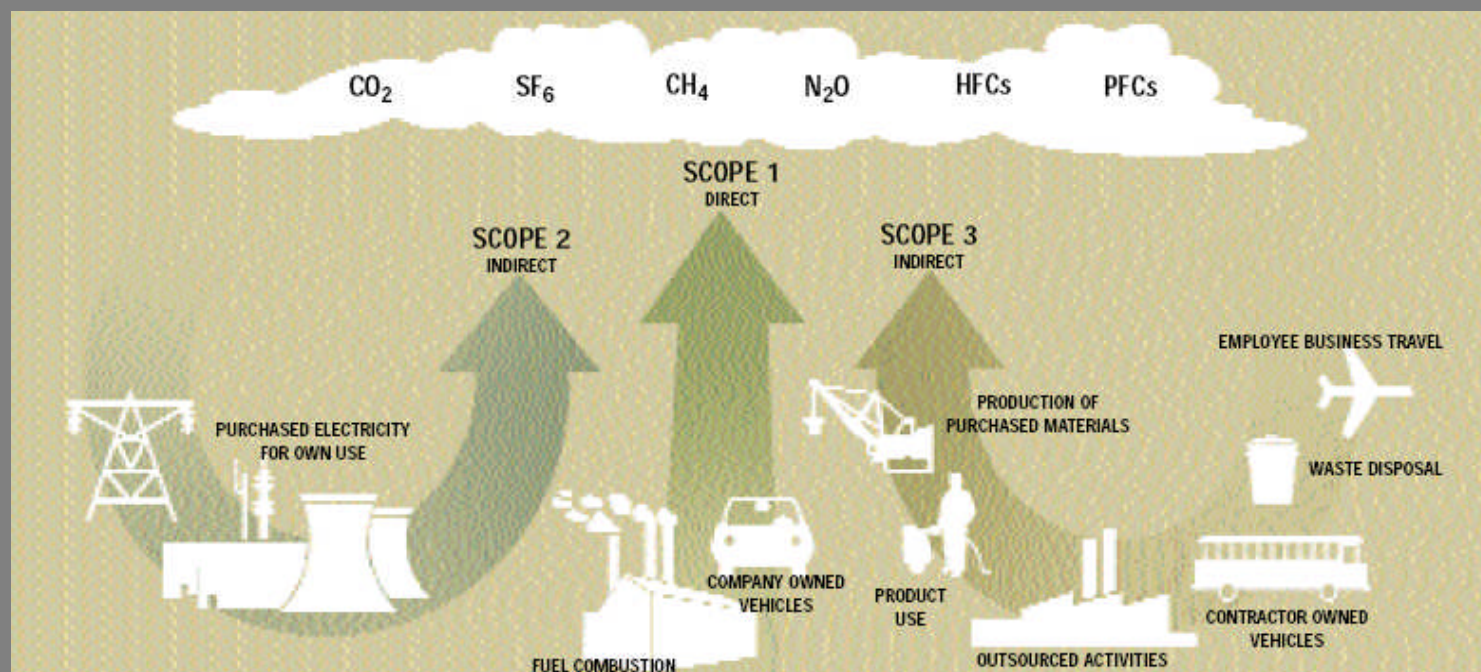
Approach matters most for treatment of partially owned or operated facilities (e.g. government owned – contractor operated) and for lease agreements

## First Component: Step 2 - Identify Operational Boundaries

### Which sources of emissions should you include?

- Stationary Combustion of fossil fuel
- Process emissions
- Mobile Sources
- Refrigeration/AC
- Purchased electricity or steam
- Other Sources: backup generators, fuel for heating, aircraft, anaerobic wastewater treatment
- Optional Sources (e.g., business travel)

# First Component: WRI "Scopes"



## First Component: Example Calculations

EPA has calculation guidelines and tools available

- Example of calculation guidelines (Stationary Combustion)

$$\text{Emissions} = \sum_{i=1}^n \text{Fuel}_i \times \text{HC}_i \times C_i \times \text{FO}_i \times \frac{\text{CO}_{2 \text{ (m.w.)}}}{C_{\text{ (m.w.)}}}$$

Where:

$\text{Fuel}_i$  = Mass or volume of fuel type  $i$  combusted

$\text{HC}_i$  = Heat content of fuel type  $i$

$C_i$  = Carbon content of fuel type  $i$

$\text{FO}_i$  = Fraction oxidized of fuel type  $i$

$\text{CO}_{2 \text{ (m.w.)}}$  = Molecular weight of carbon dioxide

$C_{\text{ (m.w.)}}$  = Molecular weight of carbon

## First Component: Step 3 - Choose a Base Year

Typically the most recent year for which comprehensive data is available

Rules for adjusting your base year data for:

- Acquisitions/divestitures: adjust your base year data when these occur
- Organic growth/decline: do not adjust your base year data

# Second Component: Create an Inventory Management Plan

## Institutionalizes process

Partners develop and implement an IMP or a similar collection of Standard Operating Procedures and document process for EPA

- EPA provides checklist of components for good IMP to use as guideline when preparing documentation
- EPA offers technical assistance to help companies complete IMP documentation

**CLIMATE  
LEADERS**  
U.S. Environmental Protection Agency

[www.epa.gov/climateleaders](http://www.epa.gov/climateleaders)

### GHG Inventory Management Plan Checklist

The Inventory Management Plan (IMP) checklist describes the components of a process needed to create a high-quality corporate inventory. As part of the Climate Leaders reporting requirements, Partners describe for EPA, in a format of their choice, their company-specific approach for each IMP component listed below. Partners may either have a single formal IMP that addresses all of these components, or Partners may have a collection of Standard Operating Procedures (SOPs) and other relevant information that address all these components when taken in total. EPA recognizes that the development of the IMP is an ongoing process. The components listed as "can be completed over time" in the checklist do not have to be in place in the year that the Partner joins the program. However, they should be complete by the Partner's goal year.

IMP Component	Detail Required	Issues to Consider
<b>Partner Information</b>		
1. Company Name	Legal name of entity	
2. Corporate Address	Physical and mailing address	
3. Inventory Contact	Contact name and title	
4. Inventory Contact Information	Contact information (telephone/fax/email)	
<b>Boundary Conditions</b>		
<b>Organizational</b>		
5. Inclusion of Partially Owned or Controlled Assets	<p>The basis for reporting emissions data from partially owned or controlled assets:</p> <ul style="list-style-type: none"> <li>Equity Approach</li> <li>Control Approach: <ul style="list-style-type: none"> <li>Financial control criterion</li> <li>Operational control criterion</li> </ul> </li> </ul>	<p>Is the approach consistent with the Climate Leaders Design Principles? If applicable, how is operational control defined? How is equity defined (e.g., based on financial ownership or value derived from company)?</p> <p>Are leases adequately addressed?</p>
6. Facilities List	<p>A list of all facilities with location, % ownership, or % control.</p> <p>Define if inventory is U.S. only or includes optional non-U.S. operations.</p>	<p>Is the list complete and does it include all facilities (including leases if applicable)? Are fleet vehicles also included if not assigned to a facility?</p> <p>How does the list compare to other public sources listing company holdings? Is there a method for determining the accuracy of the list and a process for ongoing review?</p>
<b>Operational</b>		
7. GHG List	A list of GHGs included in inventory.	<p>Are all of the six major GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>) included? Is there documentation for gases not on the list to ensure there is no oversight? Are small sources of a GHG overlooked? Has Partner at least made an estimate of the emissions from small sources and included those estimates in their inventory?</p>
8. Emission Source Identification Procedure	A description of the procedure / method used to identify direct and indirect emission sources.	<p>How does the GHG list compare to the list of emission sources specified in #9 and #10? Is the procedure likely to identify all sources? Has the procedure captured all stationary, mobile, indirect, process, and fugitive sources, including small sources?</p> <p>Does the emissions source identification procedure include networking with all the appropriate people, whose roles and responsibilities are defined in #24?</p>

## Second Component: IMP Requirement Example

Partner needs to provide specific information on the emission factors and other constants used to develop GHG inventory

- A list of emission factors and other constants and reference for factors and constants (i.e. Global Warming Potentials and conversion factors) for each emission category
- Descriptions of the process for how external references are kept current
- Where multiple factors are used, specify which facility / source uses the respective factor

## Second Component: Internal Benefits of an IMP

An IMP provides assurance that Partners develop a high-quality inventory that is consistently maintained and updated over time

- Institutionalizes inventory process
- Leads to comprehensive & credible data management
- Increases efficiency/lowers costs by centralizing processes
- Increases accuracy and transparency
- Facilitates long-term emissions/goal tracking
- May facilitate documentation of capital savings
- Allows for continual improvement

# Available Resources

<http://www.epa.gov/climateleaders/resources/index.html>

## [Inventory Guidance](#)

### [Design Principles Guidance](#)

### [Cross-Sector Guidance](#)

- Stationary Combustion
- Electricity and Steam
- Mobile Combustion Sources
- Refrigeration and Air Conditioning

### [Sector-Specific Guidance](#)

- Municipal Solid Waste Landfilling
- Refrigeration and Air Conditioning
- Iron and Steel Production
- Aluminum Production
- Cement Production
- Pulp and Paper Production

### [Optional Modules Guidance](#)

- Employee Travel
- Product Transportation
- Offset Projects

## [Reporting Requirements](#)

- Inventory Management Plan (IMP)
  - [IMP Checklist \(PDF\)](#) (3 pp, 133K, [About PDF](#))
  - Example IMPs
- Annual Reporting Form
- Reporting Expectations and Timeline
  - Base Year Reporting
  - Annual Reporting
  - [Suggested Timeline \(PDF\)](#) (1 pg, 56K, [About PDF](#))

## [Goal Setting](#)

- [Fact Sheet \(PDF\)](#) (2 pp, 211K, [About PDF](#))
- Criteria
- Evaluation

## [Achieving a Goal](#)

## [Technical Assistance](#)

## [Technical Papers](#)



# GOALS

## Third Component



## Third Component:

Set an aggressive, long-term GHG reduction goal

### More than half of Partners have already set reduction goals, others completing inventories before announcing

- **Absolute**

3M pledges to reduce total U.S. GHG emissions by 30 percent from 2002 to 2007.

- **Normalized**

Holcim (US) Inc. pledges to reduce U.S. GHG emissions by 12 percent per ton of cement from 2000 to 2008.

- **Index**

Ball Corporation pledges to reduce total U.S. GHG emissions by 16 percent per production index from 2002 to 2012.

- **Net Zero ("Carbon Neutral")**

Melaver, Inc. pledges to achieve net zero U.S. GHG emissions by 2006 and maintain that level through 2009.

## Third Component: Ensuring leadership goals

### Criteria:

- Corporate-Wide (including at least all U.S. operations)
- Based on the most recent base year for which data are available
- Achieved over 5 to 10 years
- Expressed as an absolute GHG reduction or as a decrease in GHG intensity
- Aggressive compared to the projected GHG performance for the sector

### Process:

1. Partner proposes a reduction goal
  - Informal proposal encouraged
2. EPA evaluates goal
3. If goal does not meet Climate Leaders' criteria, Partner reassesses opportunities and proposes a new goal

## Third Component: Creating a Performance Benchmark

Three models to determine Business-As-Usual sector improvement rates & current average intensity rates based on company's sector

- DOE's National Energy Modeling System (NEMS)
  - forecasts fuel-specific consumption for heavy industry
- Bureau of Labor Statistics (BLS) Forecast input/output tables for the US economy
  - estimates fuel quantities purchased/\$output
- ICF's Integrated Planning Model (IPM)
  - For electric generators

## Third Component: Sample Goal Setting Analysis

### California Portland Cement Company

- Goal Proposal: 9% per production index from 2003-2012
- Sector's forecasted benchmark improvement rate (NEMS model):
  - Reduce CO<sub>2</sub> emissions by 4.12% per ton of cement output by 2012
- Cal Portland exceeds forecasted BAU improvement rate by 118%
- Additional Factors: Energy Star Partner (Partner of the Year 2005), current intensity better than sector average

# Carbon Neutral Goals

## **1) Develop a robust GHG inventory and inventory management plan**

- Include at least one significant optional source

## **2) Achieve Internal GHG Reductions:**

- Commit to implementing internal GHG reduction measures. This commitment should be expressed as an internal GHG reduction goal that is aggressive as a stand-alone goal.

## **3) Purchase Green Power, Renewable Energy Certificates (RECs), and/or Offsets:**

- Green Power/RECs to reduce emissions associated with electricity use.
- Project-based reductions to offset the remaining emissions from direct, other indirect, and optional emissions sources

# Results: GHG Emissions Reductions

## Tangible Results

- 80 Climate Leaders Partners have set goals, equivalent to reducing the emissions of greater than 8 million cars annually
- 11 Partners have achieved their goal
  - AEP, AMD, Baxter, GM, IBM, NREL, Roche, SC Johnson, St. Lawrence Cement, UTC, Xerox
- 10 of these companies have already set a new goal



EPA Region 8 Green Building Headquarters

## Results: Leadership in the Defense Industry

### 2004:

- UTC pledges to reduce global GHG emissions by **16** percent per dollar revenue from 2001-2006.

### 2006:

- Lockheed Martin pledges to reduce U.S. GHG emissions by **30** percent per dollar revenue from 2001-2010.
- Raytheon Company pledges to reduce U.S. GHG emissions by **33** percent per dollar revenue from 2002-2009.

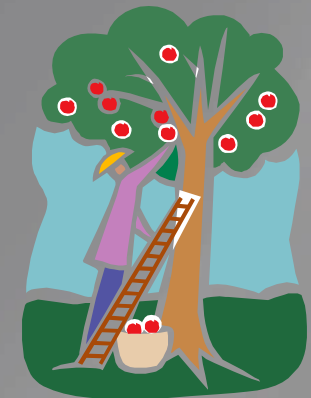
### 2007:

- UTC reduced global GHG emissions by **46** percent per dollar revenue from 2001-2006. UTC pledged to reduce total global GHG emissions by **12** percent from 2006-2010.

### ??2008??

# General GHG Reduction Methods

- “Low Hanging Fruit”
  - Lighting Projects (sensors, CFL and high efficiency lights)
  - Upgrade Cooling Systems (high efficiency units, system balance)
  - Reduce Plug Load (high efficiency equipment)
  - Variable Speed Systems for Air Handling and Product Distribution
  - Mobile Sources (employee travel/commuting and product transport)
- “Higher Hanging Fruit”
  - Combined Heat and Power (CHP)
  - Landfill Gas Recovery
  - Install Green Power (solar panels, micro turbines)
- Innovative Projects
  - New Heating/Cooling Systems (ice, under floor distribution, solar and wind building exposure)
  - Green Roofs



# Promising Technologies



Innovative HVAC System  
and Building Designs



High Efficiency  
Technologies

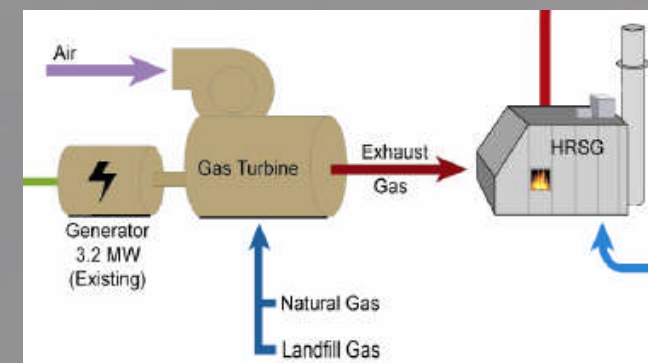
Clean Fuels and Vehicles



# Innovative Climate Leaders Partner Projects

## Partner Innovation

- Staples
  - Energy and Climate
  - Alternative Fibers
- Bank of America
  - LEED Projects
  - Server and Network Systems Review  
(Automated Shut-offs, Unplug Unused Servers, Advanced Cooling)
- SC Johnson
  - Methane Cogeneration Plant





# Thank you and Welcome

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